5.3 Reach 1

Surveys of Reach 1 (RM 32.1 – 26.6) were completed on September 9 through 12, 2003. Reach 1 has relatively high quality riparian vegetation on at least one bank for almost its entire length (Photos 5-1 and 5-2). In the upper portion of the reach, high quality vegetation occurs along the right bank, whereas in the lower portion of the reach, more high quality vegetation occurs along the left bank (see Figure 5-4). The river in this reach is naturally constrained on the right bank by the east valley wall and by road embankments. The left bank is less constrained in the downstream portion of Reach 1 compared to the upstream portion where the river flows through an agricultural area. Woody debris and gravel both appear to be moving through the reach. Large black cottonwood trees (*Populus trichocarpa trichocarpa*) directly adjacent to the river provide potential for future wood recruitment (Photo 5-3). Reach 1 contained only one dock, located at Station 1-20.

Table 5-1 summarizes habitat information collected in Reach 1. The total length of this reach was 5.5 miles (8.9 km) and glides were the dominant habitat type. The mean OHWM width was 39 m, and the mean wetted width was 33 m. A total of 18 pools were identified in this reach, including large and small pools, yielding an average of 2.5 pools per mile, and an average pool frequency of 13 channel widths between pools (CW/pool; where channel width = OHWM width) (Figure 5-8). The dominant pool-forming feature of most of the large pools in Reach 1 was riprap (11 of the 14 pools, 79 percent); one pool was formed by mid-channel scour directly downstream of a large gravel bar, and one was formed by wood. A representative photo of a lateral scour pool found in Reach 1 of the Lower Green River is provided as Photo 5-4.

There were 17 existing gravel storage areas and potential gravel storage areas identified in Reach 1. Pebble counts were taken near stations 3, 13, 19, and 27 and the results were presented in Section 5.2 and Figure 5-7.

Figure 5-9 shows the vegetative characteristics for Reach 1. Overhanging vegetation along each 300 m section ranged from 0 to 90 percent, with a median overhang of 18 percent. Overall, vegetation in Reach 1 was either high or low quality, but most of the reach is dominated by mature native vegetation (see Figures 5-3 and 5-4). The median canopy cover was 44 percent.

The majority of the 105 pieces of woody debris identified in Reach 1 were medium logs (Figure 5-10). Seven key wood pieces were identified in the reach. There were no logjams in Reach 1.

Figures 5-11 and 5-12 show the extent and type of bank armoring present in the upper and lower portions of Reach 1, respectively. Riprap is the dominant armor type in Reach 1, as it is for the majority of the study area.

Several potential restoration opportunities were identified in Reach 1 (Figure 5-13). Furthest upstream, near stations 1-4 and 1-5, a failed concrete wall and concrete debris, respectively, could be removed from the right bank in order to plant native vegetation at these locations. Near station 1-14, invasive vegetation could be removed and the area could be revegetated with native species. Further downstream, near stations 1-20 and 1-21, trash removal, bank setbacks, and revegetation could occur. There were two high-quality habitat areas, one near stations 1-24 to 2-25 and one near stations 1-31 to 1-32. The first provided pools, off-channel habitat, and high-quality vegetation, and the second contained a sinuous channel. These two areas should be protected to prevent habitat degradation.

Photo 5-1. Typical Reach 1 conditions, Stations 26 through 30, facing downstream, showing high quality riparian vegetation in the foreground and less abundant riparian vegetation downstream, where a road embankment constrains the right bank.

Photo 5-2. Typical Reach 1 conditions, near Station 12, facing downstream, showing a mid-channel island with a vegetated gravel bar.

Photo 5-3. Black cottonwood trees and terraced floodplain near Reach 1, Station 30.

Photo 5-4. Representative lateral scour pool in Reach 1.

Table 5-1
Instream Habitat Summary Statistics for Reach 1

Parameter	Result
Location	RM 32.1 to 26.6
Reach length	8.9 km (5.5 miles)
River discharge during surveys[1]	200 to 290 cfs
Number of stations	32
Number of stations at glide habitats	14
Number of stations at pool habitats	8
Number of stations at riffle habitats	8
Number of stations at run habitats	2
Average OHWM width (used in CW calculations)	39 m
Average wetted width	33 m
Total number of pools (large and small[2])	18
Total pool frequency (large and small)	13 CW/pool
Total number of pools per mile (large and small)	3.3
Number of large pools	14
Large pool frequency	16 CW/pool
Number of large pools per mile	2.5
Percent large pools by length	21%
Percent large pools by area[3]	10%
Dominant large pool forming factor	Riprap
Large Pools formed by wood	1
Number of small pools[2]	4
Small pool frequency	57 CW/pool
Number of small pools per mile	0.7
Total wood pieces (logs and rootwads)	105
Total wood pieces frequency[1]	0.5 pieces per CW
Total number of wood pieces per mile	19 pieces per mile
Number of key pieces (with and without rootwads)	5 with, 2 without
Key piece frequency[1]	0.03 pieces per CW
Number of key pieces per mile	1.3
Number of large wood pieces (with and without rootwads)	19 with, 8 without
Large wood pieces frequency	0.01 pieces per CW
Number of large wood pieces per mile	4.9
Number of medium wood pieces (with and without rootwads)	24 with, 25 without
Medium wood pieces frequency	0.2 pieces per CW
Number of medium wood pieces per mile	8.9
Number of rootwads	22
Total number of logjams	0
Average percent of visible armoring for both banks	37%
Substrate D16	18 mm
Substrate D50	50 mm
Substrate D84	83 mm
Dominant riparian vegetation type	mature native
Range of percent overhanging vegetation for both banks	0% to 90%
Median overhanging vegetation for both banks	18%
Range of percent canopy cover	23% to 66%
Median canopy cover	44%
Number of existing and potential gravel storage areas	17 existing, 0 potential

Notes:
1-Flow based on USGS Gauge #12113000, Green River near Auburn, Washington
2-Small pools are those covering 25 percent to 50 percent of wetted width.

3-Area in reach calculated as reach length times average OHWM width.

Fig 5-8

Insert Fig 5-9

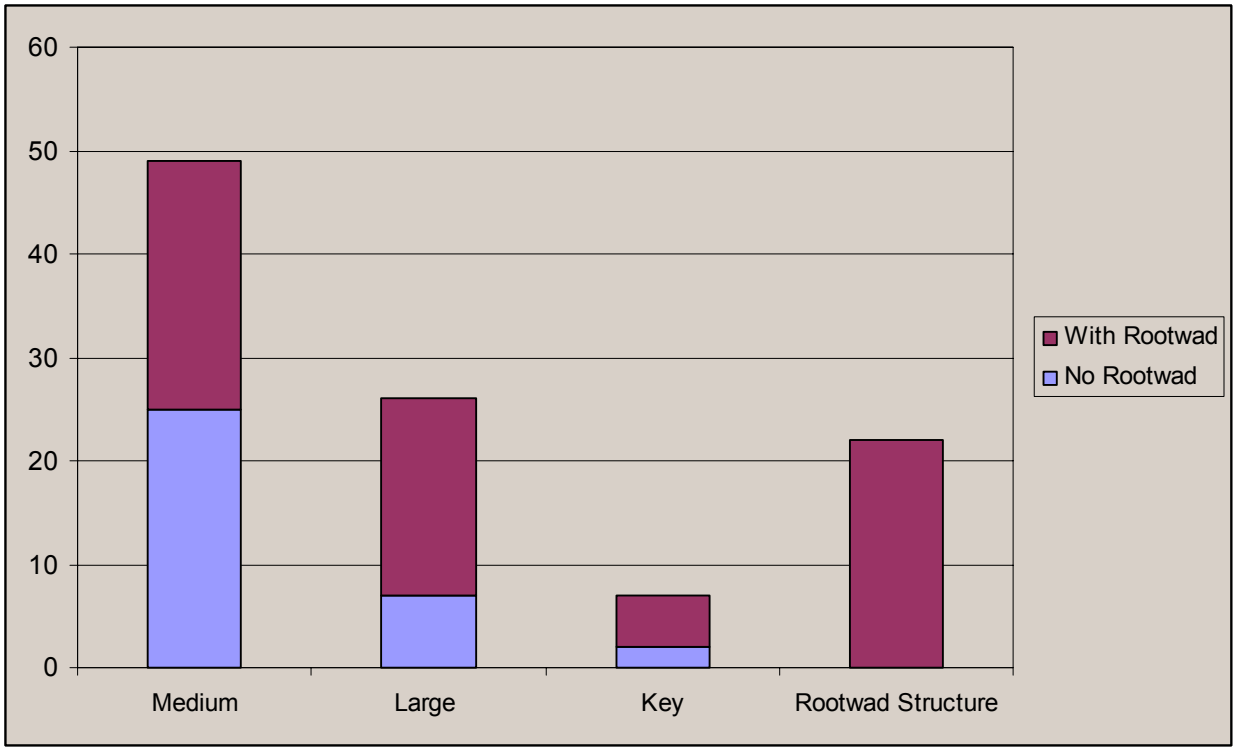

Figure 5-10. Numbers of wood pieces and distribution of size and type in Reach 1.

Fig 5-11

Fig 5-12

Fig 5-13.